on September 27 showed no significant changes in cellularity or the myelogram. On September 27, we evaluated the serum concentration of 1,25-dihydroxyvitamin D_3 in this patient before and 1–6 h after the administration of a single oral dose of 1 μg. Serum concentrations of this agent ranged from 19–30 pg/ml.

In the present case, the effects of this drug may not be due to induction of differentiation of blasts. We considered that the underlying stem-cell abnormality was unaffected, as the erythrocyte count increased as did the MCV. The increase in MCV and the lack of an increase in monocytes suggest that this agent improved the hematological findings via some other mechanism. The normalization of LDH and indirect bilirubin suggested a decrease in RBC integration. On the other hand, the increase in platelet count was related to a decrease in PAIgG, so that the drug may have acted as a immunosuppressor [5] in this case.

We conclude that the adminisration of a low dose of 1-hydroxyvitamin D_3 may be beneficial in treating elderly patients with chronic myelodysplastic syndromes, without serious adverse effects.

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Parathyroid Hormone-Related Protein-Associated Hypercalcemia in Probable Intravascular Lymphoma of B-Cell Type

To the Editor: Humoral hypercalcemia of malignancy (HHM) is well-recognized as a pathological condition caused by humoral mediators produced by malignancies. Parathyroid hormone related protein (PTH-rp) is one of the major causative factors in HHM. We present a case of large-cell lymphoma of B-cell type, i.e., probable intravascular malignant lymphoma (IVL), presenting with HHM with elevated serum PTH-rp concentration.

A previously healthy 64-year-old woman presented with a 2-month history of recurrent seizures and progressive mental deterioration. She was hospitalized in February 1994. On admission, she was lethargic and delirious. She had left hemiparesis and positive Babinski-sign. There was no lymphoadenopathy or skin lesions. Serial cranial CT scans disclosed

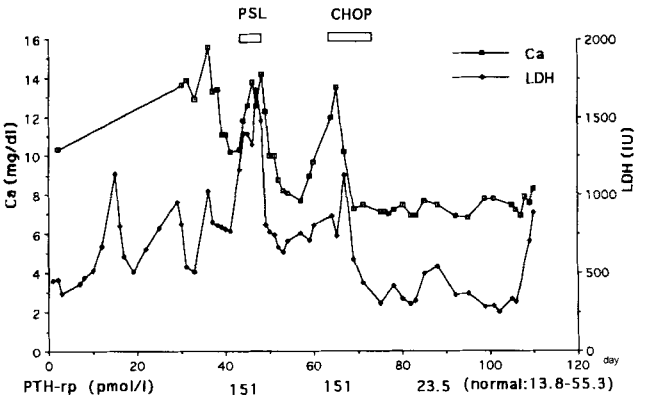

Fig. 1. Clinical course of the patient.

transitional multiple low-density areas in the cerebrum. Blood count was unremarkable. Serum electrolytes were normal, including serum calcium concentration of 10.3 mg/dl. Lactate dehydrogenase (LDH) was elevated (459 IU/l). She was seronegative for HTLV-I and HIV. Subsequently, the patient became unconscious. In March, elevated serum calcium concentration was noted (13.1 mg/dl). PTH-rp was also elevated (151 pg/ml; normal, 13.8–55.3 pg/ml). PTH (intact) was decreased (6 pg/ml; normal, 10–60 pg/ml). 1-25$(OH)_2$ vitamin D, TNFα, IL-1α, and IL-1β were not elevated. Gallium scintigraphy disclosed high uptake in the right supraclavical ectopic bone formation. Both aspiration smears from the ectopic bone and blood bone marrow revealed atypical large lymphoid cell infiltration. These cells were positive for CD45 (LCA) and CD20 (L26), but negative for CD45R0 (UCHL-1). There was no splenohepatomegaly or lymphoadenopathy on CT scan or echo sonography. Muscle biopsy was unremarkable. Large B-cell lymphoma (putative IVL) was diagnosed.

The patient was initially treated with high doses of predonine (1,000 mg/day for 3 days), and she subsequently received a regimen of chemotherapy (cyclophosphamide, doxorubicin, vincristine, and prednisolone: CHOP). The serum calcium level, LDH, and PTH-rp decreased to within normal range (Fig. 1). However, the patient became apallic, and died of pneumonia 40 days after chemotherapy.

At autopsy, there were widespread necroses in the cerebrum. No arteriosclerosis, thrombosis, or vascular wall destruction was noted. There was no lymphoma-cell infiltration in any organ, including the cerebrum, lung, adrenal glands, and bone marrow.

IVL is a rare disease, characterized by intravascular proliferation of lymphoma cells, which predominantly affects the central nervous system (CNS) or skin, and occasionally bone marrow [1]. The immunohistochemical properties of proliferative lymphoma cells primarily indicate B-cell lineage [1,2]. In our case, postmorten examination disclosed widespread necroses in the CNS. However, no vascular change or lymphoma cells were detected at autopsy. We speculate that the CNS lesions were due to vascular occlusion by lymphoma cells, and partial or complete remission was induced by regimen of chemotherapy as previous reported for patients with IVL treated with aggressive combination chemotherapy [2].

Serum PTH-rp concentrations are often increased in hypercalcemic patients with solid cancers such as squamous cell carcinoma, or adult T-cell lymphoma-leukemia, but rarely in B-cell lymphoma. To date, only two cases with IVL have presented with HHM [3,4]. However, the exact cause of hypercalcemia in those patients with IVL was unclear. In our case, serum calcium, LDH, and PTH-rp concentrations responded dramatically to chemotherapy. This rare case represents another PTH-rp-producing B-cell lymphoma.

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All-*trans* Retinoic Acid-Induced Labor in a Pregnant Patient With Acute Promyelocytic Leukemia

To the Editor: The clinical management of acute leukemia during pregnancy is difficult due to concerns regarding both teratogenic effects of chemotherapy and pregnancy complications related to myelosuppression [1]. Despite this, there is evidence that successful outcomes for mother and child may occur using standard chemotherapeutic agents, particularly in the second and third trimester. Acute promyelocytic leukemia (APL) occurs in women of childbearing age, and has been described in pregnant women. During the last decade, management of APL has changed and includes the use of all-*trans* retinoic acid (ATRA). ATRA is contraindicated during pregnancy due to the known teratogenic effects of retinoid compounds on the developing fetus. There have been a few case reports of pregnant women receiving ATRA during the second and third trimesters of pregnancy, and successful outcomes have occurred [2–6]. This case report describes a woman who was carrying a fetus with Potter's syndrome (oligohydramnios and bilateral renal agenesis) and who developed APL in the last trimester of pregnancy. This case differs from those reported previously because the initiation of ATRA therapy resulted in the onset of labor.

The patient was a 29-year-old white female who was noted to have oligohydramnios during her first trimester. The fetus was diagnosed with Potter's syndrome, and the patient refused termination of the pregnancy on religious grounds. She presented in week 29 of pregnancy with vaginal bleeding and was noted to have marked pancytopenia. Bone marrow exam was performed and showed the characteristic morphology of APL. Because the fetus was nonviable, the initial plan was to induce labor with pitocin in an attempt to avoid possible peripartum complications during later stages of her leukemia treatment. Induction of labor was not attempted, however, because the patient's cervical os was closed, and there was no evidence of effacement.

After receiving informed consent, she was started on ATRA 45 mg/m^2/day and within 24–36 hr began having regular contractions, 3–5 min apart. At this time, her cervix was 3 cm dilated and she was 80–90% effaced. Within the next 6 hr she was fully dilated and the fetus and placenta were delivered without any hemorrhagic complications. As expected, the baby died within 30 min of delivery. The patient had not been started on other medications or had other interventions. The patient remained hospitalized and on ATRA for 24 days. She achieved complete remission, had minimal symptoms from ATRA, and did not develop retinoic acid syndrome. The patient subsequently received two cycles of anthracycline/cytarabine-based chemotherapy and has remained in complete remission for 20 months.

The treatment of APL has significantly changed since the introduction of ATRA therapy. Although retinoids are teratogenic, there have been recent reports of pregnant women with APL successfully completing their pregnancies and delivering healthy newborns while on ATRA. This case involves an unusual combination of clinical features, and resulted in an outcome that has not been previously described. It is unclear by what mechanism ATRA would induce labor; however, the temporal proximity of ATRA with the prompt and unexpected initiation of labor suggests a causal relationship. Given the limited number of patients who have received ATRA during pregnancy, it is currently not known if this will be a more common observation. Additional reports of ATRA during pregnancy will need to be compiled to further assess its safety.

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Pure Red-Cell Aplasia Requiring Cytotoxic Chemotherapy: Presence of Clonal T-Lymphocytes Without Characteristics of Chronic Lymphocytic Leukemia

To the Editor: Pure red-cell aplasia (PRCA) is a rare hematological disorder characterized by a selective reduction of erythropoiesis and an association with immunological abnormalities, probably as an inhibition of erythropoiesis by T cells [1]. Immunosuppressive therapies with prednisolone, cyclosporin, and antithymocyte globulin are sometimes effective, but refractory cases are often observed. Less than 10% of chronic lymphocytic leukemias (CLL) are complicated with PRCA and are at advanced stages (Rai classification 2–4) [2,3]. For these cases, cytotoxic chemotherapies have been effective by eliminating CLL-cells.

We report on a 48-year-old woman with PRCA diagnosed in September 1989, who was refractory for prednisolone and cyclosporin. She was without any characteristics of CLL, whereas she had some clinically profound characteristics. First, surface-marker analysis of peripheral lymphocytes indicated an increase of the proportion of suppressor/cytotoxic T cells (75.4% CD8+ and 20.4% CD4+ cells). Second, erythroid colony formation from bone marrow was decreased to 15.3 $\pm$ 1.0 per 2.5 $\times$ 10^4 mononuclear